## REMARKS

Replacement drawing sheets 1-6 are enclosed. No new matter is added.

Pursuant to 37 CFR 1.83(a), Figure 3 has been amended without adding new matter to depict a transmitter 141 connected to the duplexer 140, thus forming a transceiver. The originally filed specification stated, at p. 6, lines 5-8:

> FIG. 3 illustrates a receiver path according to an exemplary embodiment of the present invention. For simplicity of illustration, a transmitting path is not shown in FIG. 3. It will be appreciated that the receiver path of FIG. 3 can be used in conjunction with any suitable transmitting path, such as the transmitting path shown in FIG. 1.

Since the specification as filed expressly contemplated connecting the receiver path of Figure 3 to a transmitter to form a transceiver, no new matter is added in the amendments to the drawing. As details of the receiver path are not required to understand the invention, the receiver path is depicted in amended Figure 3 as a functional block.

The specification is amended to alter the description of drawings and the textual reference to Fig. 3. No new matter is added.

Claim 32 is amended to correct a drafting error. Page 8, line 21 shows that under the conditions recited in claim 32, the gain should be set to a minimum value, not a maximum.

The Examiner rejected claims 25-41 under 35 U.S.C. § 112, first paragraph, as containing subject matter not described in the specification to reasonably convey to one skilled in the art that the inventor had possession of the claimed invention at the time the application was filed. In particular, the examiner stated "There is no support provided for using the transmit power of a transmitter that is part of a transceiver in the claimed process." Applicant does not understand this assertion. The only transmitter disclosed in the specification is part of a transceiver.

"According to an exemplary embodiment, the third order input intercept point and the gain of the RX low noise amplifier 155 are adjustable, depending on the state of operation of the

**transceiver**, to maximize the dynamic range of the receiver." p. 6, lines 16-18. This sentence is § 112 support for any claim limitation directed to altering the third order input intercept point and/or the gain of a low noise amplifier based, at least in part, on the state of operation of a transceiver, e.g., claims 25-26 and 29-41.

In the next sentence, at p. 6, lines 19-22, the specification states:

> The third order input intercept point of the RX low noise amplifier 155 may be selected based on several factors, i.e., the transmit power level **of the system**, the received signal strength, etc. According to an exemplary embodiment, the transmit power level is used to adjust the third order intercept point.

To one of ordinary skill in the art, the transmit power level "of the system" necessarily refers to the transmit power level of the same system of which the Rx low noise amplifier is a part. Any other interpretation is nonsensical. Furthermore, this sentence immediately follows that quoted above, explicitly stating that the IIP3 and gain may be adjusted based on the state of the transceiver. This passage is § 112 support for any claim limitation directed to altering the third order input intercept point of a low noise amplifier based, at least in part, on the transmit power level of a transceiver, e.g., claims 25-26, 29-34, 36, 38, and 40.

In the next sentence, at p. 6, lines 22-25, the specification states: "The transmit power level may be detected in any conventional manner, e.g., by direct measurement of the transmit signal, through inference based on the detected received signal strength, or by referring to a look-up table in the DSP 200." This sentence is § 112 support for any claim limitation directed to altering the third order input intercept point of a low noise amplifier based, at least in part, on a detected received signal strength, e.g., claims 29-32 and 34-41.

In the next sentence, at p. 6, lines 25-27, the specification states: "To avoid the problems associated with the prior art, an error rate, such as a bit error rate or frame erasure rate (FER), of the received signal may also be used in the selection of the third input intercept point." This sentence is § 112 support for any claim limitation directed to altering the third order input

intercept point of a low noise amplifier based, at least in part, on a received signal error rate, e.g., claims 26-27, 30-32, and 36-41.

In the next sentence, at p. 6, line 27 – p. 7, line 2, the specification states:

> For this purpose, the DSP 200 processes the digital baseband data output from the Amplifier/Detector 190 and determines the FER from the checksum within each frame of the digital data in a conventional manner. The DSP 200 may be implemented as, e.g., a programmable microprocessor.

The acronym "DSP" is well known in the art to refer to a Digital Signal Processor, and the last sentence of this passage explicitly discloses that it may be a programmable microprocessor. This passage is § 112 support for any claim limitation directed to the use of a processor to calculate a signal error rate, e.g., claims 26, 29, and 33.

In the next sentence, at p. 7, lines 3-5, the specification states: "A **transceiver** according to the IS-95 standard dynamically varies the transmitter power level over approximately an 80 dB range. The DSP 200 determines whether the detected transmit power level is high or low." This passage is § 112 support for any claim limitation directed to a transceiver – or, which is the same thing, the transmitter of a transceiver – operative to vary the transmitter power level between at least a high level and a low level, e.g., claims 25, 29, and 33.

In the next sentence, at p. 7, lines 5-7, the specification states: "If the transmit power level is high, e.g., within 10 dB of the upper limit of the transmit power range, the third order intercept point is set to a maximum level." This sentence is § 112 support for any claim limitation directed to setting the third order input intercept point of a low noise amplifier to a maximum level based, at least in part, on the transmit power of a transceiver being high, e.g., claims 25, 29, and 34-35.

In the next sentence, at p. 7, lines 7-11, the specification states:

> If the transmit power level is low, e.g., more than 10 dBm below maximum power, the DSP 200 determines whether the FER exceeds a predetermined threshold, e.g., 1/2 %. According to an exemplary embodiment, if the FER exceeds the predetermined threshold **and** the

> transmit power level is low, the third order input intercept point of the low noise amplifier 155 is set to a maximum level

This passage is § 112 support for any claim limitation directed to setting the third order input intercept point of a low noise amplifier to a maximum level based, at least in part, on the transmit power of a transceiver being low and an error rate (in particular, a FER) being above a threshold (in particular, 1/2%), e.g., claims 26, 32, 38, and 40.

In the next sentence, at p. 7, lines 11-13, the specification states: "If the transmit power level is low **but** the FER does not exceed the predetermined threshold, the third order input intercept point is set to a minimum level." This sentence is § 112 support for any claim limitation directed to setting the third order input intercept point of a low noise amplifier to a minimum level based, at least in part, on the transmit power of a transceiver being low and an error rate (in particular, a FER) being below a threshold, e.g., claims 26-27, 30-31, 36, and 38.

Two sentences later, at p. 7, lines 16-17, the specification states: "The gain of the RX low noise amplifier 155 may also be selected based on the received signal strength." This passage is § 112 support for any claim limitation directed to setting the gain of a low noise amplifier based, at least in part, on the received signal strength, e.g., claims 30-32, 35, 37, 39, and 41.

Two sentences later, at p. 7, lines 20-22, the specification states:

> The DSP 200 determines whether the detected signal strength exceeds a predetermined threshold. If the received signal strength is below a predetermined threshold, i.e., less than 30 dB above the receiver sensitivity, the gain of the RX low noise amplifier 155 is set to a maximum level.

This passage is § 112 support for any claim limitation directed to setting the gain of a low noise amplifier to a maximum level based, at least in part, on the received signal strength being below a threshold, e.g., claims 30, 35, and 37.

In the next sentence, at p. 7, lines 22-24, the specification states: "If the received signal strength is above the predetermined threshold, e.g., greater than 30 dB above the receiver

sensitivity, the gain is set to a minimum level." This sentence is § 112 support for any claim limitation directed to setting the gain of a low noise amplifier to a minimum level based, at least in part, on the received signal strength being above a threshold, e.g., claims 31, 39 and 41.

In the next sentence, at p. 7, lines 24-25, the specification states: "The DSP 200 adjusts the gain and third order input intercept point of the low noise amplifier 155 by transmitting appropriate control signals via, e.g., control lines 210 and 220." This sentence is § 112 support for any claim limitation directed to adjusting the gain and/or the third order intercept point of a low noise amplifier by a processor, e.g., claims 33-41.

Section 112 support for the specific claimed conditions resulting in the particular claimed adjustments of the IIP3 and gain of a low noise amplifier is found at p. 8, lines 1- 23. Note, in particular, the introductory text: "The selection of the third order input intercept point and the gain of the low noise amplifier 155 varies, depending on the state of operation of the transceiver. The states of operation of the transceiver may be categorized as follows:"

As Applicant has demonstrated, all pending claims are fully supported by the specification as filed. In particular, the contention that the specification does not support using the transmit power of a transmitter that is part of a transceiver to adjust the gain and/or IIP3 of a low noise amplifier is untenable.

The Examiner rejected claims 25-41 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,134,430 to Younis in view of U.S. Patent No. 5,758,271 to Rich. These rejection are also confusing. Regarding claim 25, the Examiner stated that Younis discloses a transceiver having a transmitter, receiver, and processor. Younis does not disclose a transmitter at all. The word "transmitter" appears in Younis exactly four times. Three of these (at col. 4, line 8; col. 7, line 22; and col. 8, line 59) merely state that a received signal is demodulated in accordance with the modulation format used at the transmitter (which is

obviously not a local transmitter). The other is at col. 17, line 9, listing "punctured transmitter output" as an operating mode.

The Examiner further stated that Younis discloses detecting at least high and low transmit powers of a transmitter, and if the transmit power is high, setting the IIP3 to a maximum level, citing to col. 13, lines 13-39. The cited passage does not mention power at all, does not mention transmitter power, does not mention detecting high and low values of transmit power, and does not mention setting the IIP3 of a low noise amplifier to a maximum level when the transmit power is high. The cited passage states that the RSSI slope may be used to measure the level of non-linearity in a receiver. Younis additionally states that non-linearity may be estimated by a change in Ec/Io (energy per chip divided by total power spectral density of the received signal). Ec/Io is a signal-to-noise parameter; it is not a transmitter power level. Younis is completely silent as to detecting high and low transmitter power levels, and adjusting an IIP3 based on transmitter power levels. Younis teaches only adjusting the IIP3 of a low noise amplifier based on non-linearity (primarily RSSI slope).

The Examiner then stated that Rich discloses "a similar system addressing the design issues of a third order intercept point." Rich has nothing to do with the third order intercept point of a low noise amplifier. Rich discloses adjusting the gain of a low noise amplifier according to a detected error rate.

The Examiner also stated that Rich teaches that the noise from a transmitter in the same device (desense) is compensated for. Rich lists three of receiver interference: co-channel interference, adjacent channel desense, and intermodulation. That statement is the extent of any disclosure in Rich of desense or its source. It is well known in the art that receiver desensitization (desense) – the decrease in a receiver's sensitivity to a desired signal caused by the presence of an undesired signal – may have many sources. Indeed, the most common cause of receiver desense is outside interference. It is an assumption, unsupported by the

disclosure of Rich or the knowledge of those skilled in the art, that the adjacent channel desense he lists as one of many causes of interference in a receiver is caused by the transmitter leg of a transceiver including that receiver.

Even assuming, *arguendo,* that the bare mention of desense as a potential source of receiver interference equates to a disclosure by Rich of considering transmitter power in optimizing the receiver, Rich (like Younis) simply does not disclose detecting the transmitter power level of a transmitter, does not disclose detecting high or low levels of the transmitter power, and does not disclose adjusting the gain of a low noise amplifier based on a detected high or low transmitter power levels (in specific combinations with other conditions, as claimed).

The Examiner stated that the method of Younis is equally applicable in the case of desense. Rich teaches that desense causes interference, not non-linearity. The method of Younis is to reduce non-linearity (which is detected by RSSI slope) by adjusting the IIP3 of a low noise amplifier. Nothing in the references or in the art suggests that the method of Younis would be effective to reduce desense interference.

The Examiner further stated that the suggestion lies in Rich that IIP3 adjustment is applicable to many types of noise. Rich does not mention IIP3 adjustment at all. Rich teaches adjusting the gain of a low noise amplifier, based on an error rate, to reduce intermodulation distortion. Rich is completely silent as to transmitter power being a consideration in that (or any other) adjustment.

Regarding claim 29, the Examiner repeated the erroneous assertion that Younis discloses a transceiver, a transmitter, transmitting a signal at variable transmit power including a high in a reduced power level, or a receiver including a low noise amplifier having an adjustable gain. Younis does not disclose any of these claimed elements. Younis similarly does not disclose operating a low noise amplifier at maximum gain and maximum IIP3 if the transmitter is transmitting at or above a high power level and the received signal strength is below a signal

strength threshold. Younis is completely silent as to transmitter power level at all, much less having any influence on the gain or IIP3 adjustment of a low noise amplifier.

The Examiner also repeated the erroneous assertion that Rich addresses design issues involving a third order intercept point to compensate for noise from a transmitter in the same device. Rich is completely silent on IIP3 adjustment, and at most, Rich lists desense as one potential source of receiver interference.

These errors are repeated in the rejection of claim 33. Younis simply does not disclose a transmitter, a variable power transmitter, a variable power transmitter having at least low and high power levels, a low noise amplifier having an adjustable gain, or the adjustment of any parameter of the low noise amplifier in response to a transmitter's transmit power. Rich does not disclose any adjustment of a third order intercept point.

The Examiner has failed to establish a *prima facie* case of obviousness, as neither prior art reference discloses the teaching for which it has been cited. Alone or in combination, neither Younis nor Rich teach a transceiver having a variable power transmitter, or a processor operative to adjust the IIP3 of a low noise amplifier in response to the transmitter's transmit power.

The Examiner has addressed only the independent claims. Since the cited prior art fails to disclose each and every limitation of these claims, the independent claims exhibit patentable nonobviousness over the art of record, and the § 103 rejections must be withdrawn. As each dependent claim includes every limitation of its parent claim(s), the dependent claims similarly define patentably over the art of record. However, Applicant additionally traverses the implied rejections of the dependent claims.

The table at p. 8, lines 5-23 discloses a matrix of different conditions under which both the gain and the IIP3 of a low noise amplifier are adjusted in response to transmitter power, receiver signal strength, and an error rate. Claims 30-32 and 34-41 recite as elements the

various combinations of conditions and the resulting gain and IIP3 control values. Even if the combination of Younis and Rich render obvious the broad concept of manipulating the gain and IIP3 based on received signal strength and error rate, the references, alone or in combination, fail to teach or suggest the specific combinations of transmitter power, received signal strength, and an error rate, and the resulting specific control (max and min values) of the gain and IIP3, as recited in the dependent claims.

Accordingly, prompt allowance of all pending claims is respectfully requested.

Respectfully submitted,

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